aquifer and the first confined aquifer in Lower Three Runs.

4.3.3.2.3 Shut Down and Maintain

The impacts described in Section 4.3.3.2.2 would also apply to this alternative.

TC

4.3.4 AIR RESOURCES

4.3.4.1 Affected Environment

DOE assumes that the climate, meteorology, and ambient air quality for Par Pond are equivalent to those for the SRS, which are discussed in Section 4.1.4.1.

4.3.4.2 Environmental Impacts

4.3.4.2.1 No Action

DOE is allowing the level of water in Par Pond to fluctuate, as discussed in Section 4.3.2.2.2. The estimated lowest water elevation for Par Pond is 197 feet (60 meters) above mean sea level, which could expose up to 340 acres (1.4 square kilometers) of sediment (Gladden, Paller, and Mackey 1995). Winds could cause the exposed sediment to become resuspended as airborne particulates.

DOE used the MEPAS model to estimate quantities of resuspended particulates originating from exposed sediment (Droppo et al. 1995), incorporating joint frequency wind data from the L-Area wind tower for the period from 1986 to 1991 (Simpkins 1996a). Data from the L-Area tower is representative of Par Pond due to its proximity. The algorithm used by MEPAS to calculate the particulate emission factor has a parameter for the frequency of disturbances to the dried shoreline sediment. For conservatism, a factor of 30 disturbances per month was used by DOE to estimate a worst-case particulate emission rate. By using a factor of 30 disturbances per month, the 24-hour period of interest is modeled.

TE

Table 4-50 lists the maximum concentration in air of nonradiological constituents at the boundary of the SRS. Included in the table is a column that shows the maximum allowable concentrations established by the South Carolina Department of Health and Environmental Control (SCDHEC 1976). As can be seen from the table, the resuspension of particulate matter from Par Pond produces only minimal concentrations by comparison to the allowable concentration.

TC

Table 4-50. Maximum ground-level concentrations of nonradiological air constituents at the SRS boundary under the No-Action Alternative.

Nonradiological constituent	Modeled maximum air concentration[a] ($\mu g/m^3$)	Maximum allowable concentration[b] ($\mu g/m^3$)
Manganese	2.5×10^{-6}	1.0
Mercury	1.2×10^{-6}	0.25
PM_{10}[c]	15	50 (annual average) 150 (24-hour average)

TC

a. DOE assumed 30 disturbances per month (i.e., once per day) of the lakebed so that the calculated air concentration is an upper bound of the concentration over any time period (e.g., week, month, year).
b. Source: SCDHEC (1976).
c. PM_{10} is particulate matter with a diameter of 10 microns (0.00001 m) or less.

The estimated airborne maximum SRS boundary-line concentrations of radionuclides resulting from the resuspension of dried lakebed sediments would be 1.63×10^{-4} and 6.0×10^{-7} picocurie per cubic meter for cesium-137 and cobalt-60, respectively. These concentrations represent a radiological dose (from all pathways originating with air dispersion) of 6.5×10^{-3} millirem per year and 9.8×10^{-6} millirem per year, respectively. Both of these doses, as well as the sum of the doses, are much less than the 10 millirem requirement of 40 CFR 61 and would not contribute any appreciable dose the normal site emissions from the SRS. TC

4.3.4.2.2 Shut Down and Deactivate

The effects of this alternative would be the same as those described in Section 4.3.4.2.1. Impacts to the existing SRS ambient air quality would be minimal.

4.3.4.2.3 Shut Down and Maintain

The effects of this alternative would be the same as those described in Section 4.3.4.2.1. Impacts to the existing SRS ambient air quality would be minimal.

4.3.4.3 Combined Impacts of L-Lake, SRS Streams, and Par Pond

4.3.4.3.1 No Action

The continued operation of the River Water System would have minimal impact on the existing ambient air quality at the SRS. DOE would maintain L-Lake and the streams at their current levels, and the potential for exposed sediments to become airborne would be minimal. Section 4.1.4.1 discusses releases of tritium due to the presence of L-Lake. DOE expects Par Pond to fluctuate naturally between a full pool level and a modeled low of 196 feet (58.8 meters) above mean sea level (Gladden 1996a), which could expose as much as 340 acres (1.4 square kilometers) of sediment (Gladden, Paller, and Mackey 1995). Section 4.3.4.2.1 discusses potential impacts to ambient air quality due to this natural fluctuation. TC

The primary contaminants in L-Lake, Par Pond, and the streams would be radionuclides and metals. No organic contaminants would be present in the lakebed or the floodplain at levels that are close to EPA Region IV risk-based concentrations, which DOE is using as screening levels at SRS (DOE 1996c).

There would be minimal impacts to the ambient air quality as a result of the continued operation of the River Water System.

4.3.4.3.2 Shut Down and Deactivate

The shutdown and deactivation of the River Water System could cause the level of water in L-Lake to recede as discussed in Section 4.1.2.2.2 and become completely dry over a period of several years. In addition, Par Pond could recede from its current level to an estimated lowest water elevation of 196 feet (58.8 meters) above mean sea level, which would expose as much as 340 acres (1.4 square kilometers) of sediment (Gladden, Paller, and Mackey 1995). TC

For streams, the flows would return to natural base levels. As discussed in Section 4.1.6.2.2, the reductions in stream flow are not likely to result in exposed sediment. Sediment that is covered with water or vegetation could not become suspended by air currents and, therefore, no impacts are likely.

Table 4-51 lists the maximum concentration in air of nonradiological constituents at the boundary of the SRS. Included in the table is a column that shows the maximum allowable concentrations established by the South Carolina Department of Health and Environmental Control (SCDHEC 1976). As can be seen from the table, the resuspension of particulate matter from L-Lake and Par Pond is well below the allowable concentration. TC

Table 4-51. Maximum ground-level concentrations of nonradiological air constituents at the Savannah River Site boundary under the Shut Down and Deactivate Alternative.

Nonradiological constituent	Modeled maximum air concentration[a] ($\mu g/m^3$)	Maximum allowable concentration[b] ($\mu g/m^3$)
Antimony	8.6×10^{-6}	2.5
Arsenic	2.2×10^{-5}	1.0
Beryllium	2.9×10^{-6}	0.01
Cadmium	1.3×10^{-6}	0.25
Lead	1.8×10^{-5}	1.5 (calendar quarter average)
Manganese	2.6×10^{-6}	25
Mercury	1.2×10^{-6}	0.25
PM_{10}[c]	16	50 (annual average) 150 (24-hour average)

a. DOE assumed 30 disturbances per month (i.e., once per day) of the lakebed so that the calculated air concentration is an upper bound of the concentration over any time period (e.g., week, month, year).
b. Source: SCDHEC (1976).
c. PM_{10} is particulate matter with a diameter of 10 microns (0.00001 m) or less.

TC

Table 4-52 lists the maximum concentration in air of the radiological constituents at the boundary of the SRS. A column also is included in the table that shows the radiation dose resulting from annual exposure to this concentration of material. This radiation dose was calculated for all potential exposure pathways (e.g., ingestion of vegetation, direct exposure to radiation) that are the result of material being suspended and transported to the site boundary. These doses are much less than the 10 millirem per year requirement in 40 CFR 61.

TC

A benefit to the environment would be the reduction of fugitive evaporative tritium emissions from the L-Lake surface water. The maximum calculated reduction in airborne tritium concentration would be 0.073 picocurie per cubic meter.

The combined effects of the shutdown and deactivation of the River Water System would have minimal impact on the ambient air quality at SRS.

4.3.4.3.3 Shut Down and Maintain

The combined effects of this alternative would be the same as those described in Section 4.3.4.3.2. Increases in concentrations of PM_{10}, air toxics, and radionuclides would be within both State and Federal regulatory guidelines.

4.3.5 ECOLOGY

The *Environmental Assessment for the Natural Fluctuation of Water Level in Par Pond and Reduced Water Flow in Steel Creek below L-Lake at the Savannah River Site* (DOE 1995a) describes the impacts of the 1991-1995 drawdown of Par Pond and the expected impacts of allowing the surface water level of Par Pond to fluctuate naturally from a full pool of approximately 200 feet (61 meters) to 195 feet (59.4 meters). The alternatives considered in this EIS would allow Par Pond to fluctuate naturally. They differ only to the extent that DOE would maintain the operability of the River Water System. The actions considered in this EIS, in relation to Par Pond, have undergone a thorough NEPA review.